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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/434,703	11/05/1999	ERIC O. BODNAR	LS/0001.01	4272

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Blakely Sokoloff Taylor & Zafman LLP
12400 Wilshire Blvd.
Seventh Floor
Los Angeles, CA 90025

EXAMINER	
NGUYEN, LUONG TRUNG	
ART UNIT	**PAPER NUMBER**
2622	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/434,703	BODNAR ET AL.	
	Examiner	Art Unit	
	LUONG T. NGUYEN	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 5/09/2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,3-7,10-21,23-27,30-41,43-47,50-66,68 and 69 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,3-7,10-21,23-27,30-41,43-47,50-66,68 and 69 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/09/2006 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 3-7, 10-21, 23-27, 30-41, 43-47, 50-66, 68-69 filed on 5/09/2006 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-7, 10-14, 18-21, 23-27, 30-34, 38-40, 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acharya et al. (US 6,154,493) in view of Benamara (US 6,128,413).

Regarding claims 1, 10, Acharya ('493) discloses a method for distributed digital image processing, comprising recording luminosity information at a first device (captured images by camera 830 are recorded in memory 834, figures 7-8, column 12, lines 25-35); without performing color interpolation at the first device, generating compressed luminosity information at the first device by applying a wavelet transform compression to individual color planes that comprise the luminosity information, followed by applying quantization and compression to the luminosity information (captured images are compressed by an image compression circuit 832, the compressing separately each of color plane channels, see Abstract, figures 2, 7-8, column 12, lines 45-50); packaging said compressed luminosity information (pack the compressed data, column 12, lines 7-11); transmitting said compressed luminosity information to a second device (the compressed images are transferred to computer system 810, figures 7-8, column 13, lines 15-25); restoring said luminosity information from said compressed luminosity information at the second device (figure 8, column 13, lines 40-57); converting said luminosity information at the second device into a color image, including performing color interpolation at the second device (the application used to perform the integrated color interpolation after download from camera 830, figure 8, column 13, lines 1-5, lines 40-52).

Acharya ('493) fails to specifically disclose packaging said compressed luminosity information with header information identifying the individual color planes. However, Benamra teaches a method and apparatus for data compression, in which a color continuous tone image 510 is compressed to produce compressed image data file 512, which comprises header 526. When the previously compressed is reconstructed, the header 526 is read in and the compressed data for each channel YC, IC and QC is input and decoded in MIR decoder 540 to reconstruct

color planes Y', I' and Q' 546, then the reconstructed color planes 546 are converted to RGB color plane (figures 5A-5B, column 10, lines 15-65). This indicates that the header 526 identifies the individual color planes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) by the teaching of Benamara in order to include a file header in an image data file. This saves time in searching and retrieving image data.

Regarding claims 3, 23, Acharya ('493) discloses wherein said sensor information comprises light-level information for representing an image that has been digitally recorded at the first device (intensity values, column 11, lines 15-30).

Regarding claim 4, Acharya ('493) discloses a generic binary compression module (compression quantizer 728, figure 7, column 12, lines 1-11).

Regarding claims 5, 25, Acharya ('493) discloses run-length encoding (column 12, lines 5-11).

Regarding claims 6, 26, Acharya ('493) discloses Huffman coding (column 12, lines 5-11).

Regarding claims 7, 27, Acharya ('493) discloses reversing said compression that occurred at the first device (figure 3).

Regarding claims 11, 31, Acharya ('493) discloses apply a YUV transformation at the second device for converting said sensor into a color image in YUV color space (the application used to perform color space conversion after download from camera 830, column 2, lines 34-54, column 13, lines 1-5).

Regarding claims 12, 32, Acharya ('493) discloses converting the color image into a standard file format at the second device (store XYZ color space image data in memory 811, figure 8, column 13, lines 15-40).

Regarding claims 13, 33, Acharya ('493) discloses JPEG format (column 1, lines 65-67).

Regarding claim 14, 34, Acharya ('493) fails to specifically disclose applying JPEG compression to the color image at the second device. Official Notice is taken that applying JPEG compression to the color image at the second device such as a computer is well known the art. This reduces the time to transmit image data to another device in a network.

As for claims 18-20, 38-40, Acharya ('493) and Benamara fail to specifically disclose transmitting said compressed sensor information by first transmitting a lower-quality representation of the image recorded at the first device. However, Acharya ('493) discloses

compressed signals could be downloaded to the computer (figure 8). It would have been obvious that lower-quality image is converted into higher-quality image in order to let the user could see a higher quality on the display.

Regarding claim 21, Acharya ('493) discloses a method for deferring digital image processing, the method comprising recording sensor information at a first device (captured images by camera 830 are recorded in memory 834, figures 7-8, column 12, lines 25-35); compressing said sensor information prior to color processing by applying a transformation compression to individual color planes that comprise the sensor information, for generating compressed sensor information at the first device (captured images are compressed by an image compression circuit 832, the compressing separately each of color plane channels, see Abstract, figures 2, 7-8, column 12, lines 45-50); packaging said compressed sensor information (pack the compressed data, column 12, lines 7-11); without performing color processing at the first device, transmitting said compressed sensor information to a second device (the compressed images are transferred to computer system 810, figures 7-8, column 13, lines 40-47); decompressing said compressed sensor information at the second device, whereupon said sensor information may thereafter be processed into color image (figure 8, column 13, lines 40-52).

Acharya ('493) fails to specifically disclose packaging said compressed sensor information with header information identifying the individual color planes. However, Benamra teaches a method and apparatus for data compression, in which a color continuous tone image 510 is compressed to produce compressed image data file 512, which comprises header 526. When the previously compressed is reconstructed, the header 526 is read in and the compressed

data for each channel YC, IC and QC is input and decoded in MIR decoder 540 to reconstruct color planes Y', I' and Q' 546, then the reconstructed color planes 546 are converted to RGB color plane (figures 5A-5B, column 10, lines 15-65). This indicates that the header 526 identifies the individual color planes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) by the teaching of Benamara in order to include a file header in an image data file. This saves time in searching and retrieving image data.

Regarding claims 24, Acharya ('493) discloses applying wavelet transform to individual color planes that comprise the sensor image (see abstract, column 4, lines 49-61); and applying compression to the transformed sensor image, to create said compressed sensor image at the first device (compression quantizer 728, figure 7).

Regarding claims 30, Acharya ('493) discloses converting sensor information into color by interpolating color information (color interpolation data, column 13, lines 40-47).

Regarding claim 69, Acharya ('493) discloses a method for distributed digital image processing, comprising recording luminosity information at a first device (captured images by camera 830 are recorded in memory 834, figures 7-8, column 12, lines 25-35); while deferring color interpolation to a second device (this also means "without performing color interpolation at the first device"), generating compressed luminosity information at the first device by applying a

wavelet transform compression to individual color planes that comprise the luminosity information, followed by applying quantization and compression to the luminosity information (captured images are compressed by an image compression circuit 832, the compressing separately each of color plane channels, see Abstract, figures 2, 7-8, column 12, lines 45-50); packaging said compressed luminosity information (pack the compressed data, column 12, lines 7-11); transmitting said compressed luminosity information to a second device (the compressed images are transferred to computer system 810, figures 7-8, column 13, lines 15-25); restoring said luminosity information from said compressed luminosity information at the second device (figure 8, column 13, lines 40-57); converting said luminosity information at the second device into a color image, including performing color interpolation at the second device (the application used to perform the integrated color interpolation after download from camera 830, figure 8, column 13, lines 1-5, lines 40-52).

Acharya ('493) fails to specifically disclose packaging said compressed luminosity information with header information identifying the individual color planes. However, Benamra teaches a method and apparatus for data compression, in which a color continuous tone image 510 is compressed to produce compressed image data file 512, which comprises header 526. When the previously compressed is reconstructed, the header 526 is read in and the compressed data for each channel YC, IC and QC is input and decoded in MIR decoder 540 to reconstruct color planes Y', I' and Q' 546, then the reconstructed color planes 546 are converted to RGB color plane (figures 5A-5B, column 10, lines 15-65). This indicates that the header 526 identifies the individual color planes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) by the teaching of Benamara in order to include a file header in an image data file. This saves time in searching and retrieving image data.

5. Claims 15-17, 35-37, 41, 43-47, 50-66, 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acharya et al. (US 6,154,493) in view of Benamara (US 6,128,413) further in view of Tran (US 6,202,060).

Regarding claim 15, 35, Acharya ('493) and Benamara fail to specifically disclose transmitting compressed luminosity information from a digital camera to a computer in a wireless manner using a packet-based communication protocol. However, Tran teaches images captured by the camera 27 can be transmitted to a computer through PCMICIA bus and wireless transceiver 31; the wireless transceiver 31 is a two-way communication protocol (figure 1, column 7, line 28 – column 8, line 30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) and Benamara by the teaching of Tran in order to transmit the image to a remote device without using cable.

Regarding claims 16, 36, Tran discloses transmitting said compressed luminosity information using a packet-based communication protocol, and selectively connecting the digital camera to a cellular phone for establishing a wireless communication session with the computer (figure 1, column 7, line 28 – column 8, line 30).

Regarding claims 17, 37, Tran discloses wherein said second device comprises a computer with connectivity to the Internet (figures 3-4, column 19, lines 30-33).

Regarding claim 41, Acharya ('493) discloses an imaging system providing deferred image processing, the system comprising an imager (camera 830, figure 8, column 11, lines 15-65, column 12, lines 24-45); compressor module for compressing said luminosity information by applying a transformation compression to individual color planes that comprise the luminosity information, for generating compressed luminosity information at the imager without performing color processing (captured images are compressed by an image compression circuit 832, the compressing separately each of color plane channels, see Abstract, figures 2, 7-8, column 12, lines 45-50; column 13, lines 40-47), wherein the compressed luminosity information is packed into a bit stream (pack the compressed data, column 12, lines 7-11); a communication link (bus 760, figure 7); a decompression module for decompressing said compressed luminosity information at the target device, whereupon said luminosity information may thereafter be processed into color image (figure 8, column 13, lines 40-52).

Acharya ('493) fails to specifically disclose the compressed luminosity information is packaged into a bit stream with header information identifying the individual color planes that comprise the luminosity information. However, Benamra teaches a method and apparatus for data compression, in which a color continuous tone image 510 is compressed to produce compressed image data file 512, which comprises header 526. When the previously compressed is reconstructed, the header 526 is read in and the compressed data for each channel YC, IC and QC is input and decoded in MIR decoder 540 to reconstruct color planes Y', I' and Q' 546, then

the reconstructed color planes 546 are converted to RGB color plane (figures 5A-5B, column 10, lines 15-65). This indicates that the header 526 identifies the individual color planes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) by the teaching of Benamara in order to include a file header in an image data file. This saves time in searching and retrieving image data.

Acharya ('493) and Benamara fail to specifically disclose a wireless communication link for transmitting compressed luminosity information to a target device. However, Tran teaches images captured by the camera 27 can be transmitted to a second device through PCMICIA bus and wireless transceiver 31. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) and Benamara by the teaching of Tran in order to transmit the image to a remote device without using cable.

Regarding claim 43, Acharya ('493) discloses wherein said sensor information comprises light-level information for representing an image that has been digitally recorded at the first device (intensity values, column 11, lines 15-30).

Regarding claim 44, Acharya ('493) discloses a generic binary compression module (compression quantizer 728, figure 7, column 12, lines 1-11).

Regarding claim 45, Acharya ('493) discloses run-length encoding (column 12, lines 5-11).

Regarding claim 46, Acharya ('493) discloses Huffman coding (column 12, lines 5-11).

Regarding claim 47, Acharya ('493) discloses reversing generic binary compression that has been applied at the imager (figure 3).

Regarding claim 50, Acharya ('493) discloses converting sensor information into color by interpolating color information (color interpolation data, column 13, lines 40-47).

Regarding claim 51, Acharya ('493) discloses apply a YUV transformation at the second device for converting said sensor into a color image in YUV color space (the application used to perform color space conversion after download from camera 830, column 2, lines 34-54, column 13, lines 1-5).

Regarding claim 52, Acharya ('493) discloses converting the color image into a standard file format at the target device (store XYZ color space image data in memory 811, figure 8, column 13, lines 15-40).

Regarding claim 53, Acharya ('493) discloses JPEG format (column 1, lines 65-67).

Regarding claim 54, Acharya ('493) and Tran fail to specifically disclose applying JPEG compression to the color image at the second device. Official Notice is taken that applying

JPEG compression to the color image at the second device such as a computer is well known the art. This reduces the time to transmit image data to another device in a network.

Regarding claim 55, 56, Acharya ('493) discloses a digital camera (digital camera 830, figure 8); computer (computer 810, figure 8). Tran discloses cellular phone device (inherently included in telephone network 102, figure 4, column 17, lines 30-40).

Regarding claim 57, Tran discloses wherein said second device comprises a computer with connectivity to the Internet (figure 5, mobile computers 10, 11, 12, 13 are connected to Internet 150, column 20, lines 25-30).

As for claims 58-60, Acharya ('493) and Tran fail to specifically disclose transmitting said compressed sensor information by first transmitting a lower-quality representation of the image recorded at the first device. However, Acharya ('493) discloses compressed signals could be downloaded to the computer (figure 8). It would have been obvious that lower-quality image is converted into higher-quality image in order to let the user could see a higher quality on the display.

Regarding claim 61, Acharya ('493) discloses a digital camera (digital camera 830, figure 8, column 12, lines 24-45).

Regarding claim 62, Acharya ('493) discloses a desktop computer (computer 810, column 12, lines 24-30).

Regarding claim 63, Acharya ('493) discloses a server computer (computer 810, column 12, lines 24-30).

Regarding claim 64, Acharya ('493) fails to specifically disclose a CMOS image sensor. Official notice is taken that such CMOS image sensor is used in a camera is well known in the art. The CMOS image sensor can be integrated with control and signal processing circuit to form a camera on a chip. This reduces the size of the camera.

Regarding claim 65, Acharya ('493) fails to specifically disclose a CCD image sensor. Official notice is taken that such CCD image sensor is used to capture image in a camera is well known in the art.

Regarding claim 66, Acharya ('493) discloses gray-scale luminosity information (m bit intensity, column 11, lines 45-50).

Regarding claim 68, Acharya ('493) discloses applying wavelet transform to individual bit planes that comprise the sensor image (see abstract, column 4, lines 49-61); and applying compression to the transformed sensor image, to create said compressed sensor image at the first device (compression quantizer 728, figure 7).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LN
5/27/06

Luong Nguyen

LUONG T. NGUYEN
PATENT EXAMINER